Federal Agency for
Cartography and Geodesy

EPN Analysis Coordinator Report

Heinz Habrich

Federal Agency for Cartography and Geodesy

Content

- New Local Analysis Centre
- Updated Guidelines for EPN Analysis Centres
- Redesigned Website at BKG GNSS Data Center
- NEQ-SINEX in EPN Analysis
- Contribution of Analysis Coordinator to EPN Reprocessing
- EPN LAC Workshop 2010

WUT and MUT LAC Changes
- Background -

- Responsibility for Warsaw University of Technology (WUT) LAC changed

  from Mariusz Figurski, now at Military University of Technology, Warsaw (MUT),

  to Tomasz Liwosz (WUT)

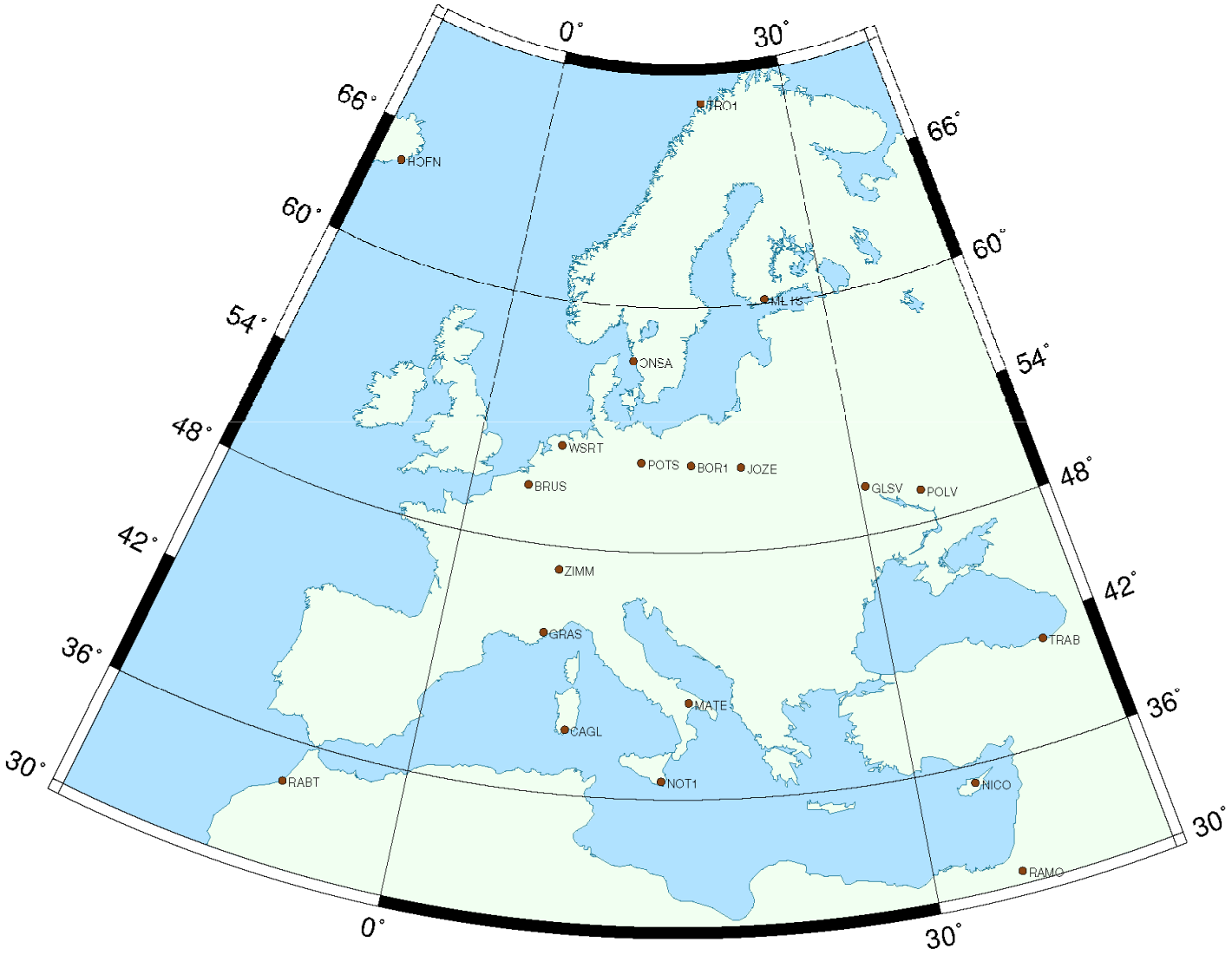
  since week 1560 (December 2009) coupled with technical changes
- Request from MUT to continue EPN activity as new LAC
- Separate MUT sub-network accepted by TWG-Chair and EPN AC responding to specific redundancy needs
- Criterion: increase of redundancy from 3 to 4 LACs for all sites

Federal Agency for
Cartography and Geodesy

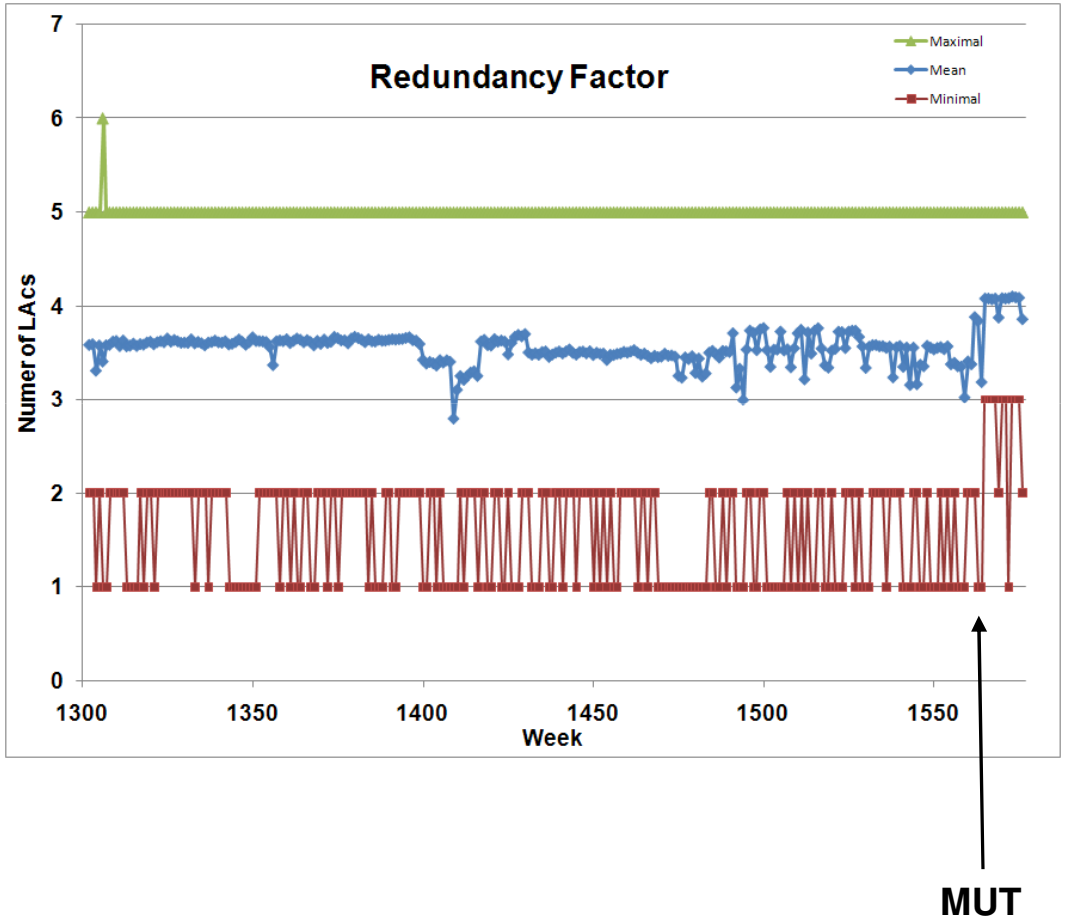
114 MUT Proposed Sited

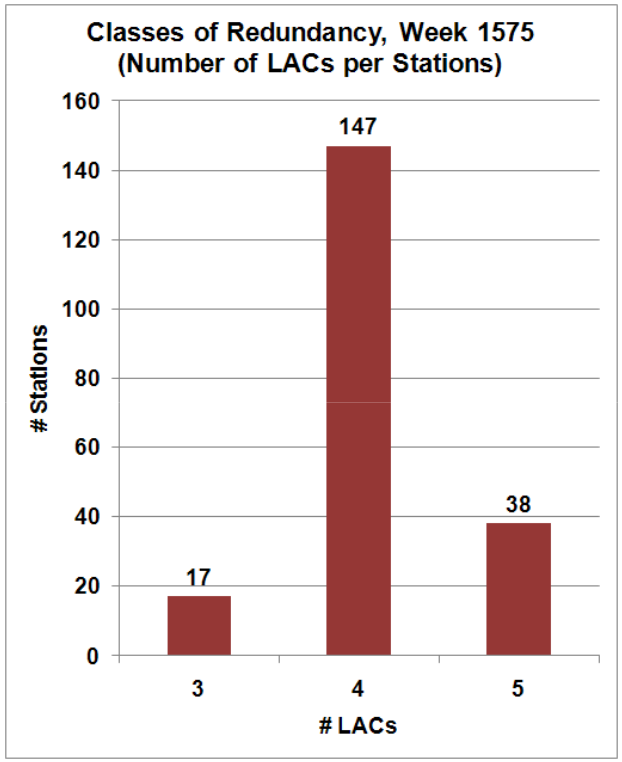
Federal Agency for
Cartography and Geodesy

20 MUT Reference Stations



Redundancy


Redundancy Factor
Maximal
Mean
Minimal
Numer of LAcs
Week
0
1
2
3
4
5
6
7
1300
1350
1400
1450
1500
1550
MUT


Classes of Redundancy, Week 1575
(Number of LACs per Stations)
Stations
LACs
0
20
40
60
80
100
120
140
160
17
147
38
3
4
5

Guidelines for EPN Analysis Centres

Prepared by the EPN Coordination Group and the EPN Central Bureau

Changes

12-02-2010

- Complete revision of the guidelines (all sections)
- Moving separate EPN Processing Option Table as addendum into the guidelines

1. EPN Analysis Components
2. Becoming a Local Analysis Centre
3. Processing Instructions
4. Submission Guidelines
5. LAC Performance Control

Addendum: Processing Options

Guidelines for EPN Analysis Centres - Analysis Components -

LAC Solutions		Coordinate Combination	
Final Weekly Coordinate Solution	mandatory	Final Weekly Coordinate Solution	
Final Daily Coordinate Solution	recommended	Final Daily Coordinate Solution	
Rapid Daily Coordinate Solution	recommended	Rapid Daily Coordinate Solution	
Hourly Coordinate Solution	optional	Hourly Coordinate Solution	
Final Daily Tropospheric Zenith Path Delays	mandatory	**Troposphere Combination**	
		Accumulated Coordinate Solution	
		EPN Projects	Re-Processing, Real-Time Analysis, GGOS

Processing Instructions
- Mandatory SINEX Data Blocks -

+SOLUTION/STATISTICS
+SOLUTION/EPOCHS
+SOLUTION/APRIORI
+SOLUTION/ESTIMATE
+SOLUTION/MATRIX_ESTIMATE L COVA and +SOLUTION/MATRIX_APRIORI L COVA or +SOLUTION/NORMAL_EQUATION_VECTOR and +SOLUTION/NORMAL_EQUATION_MATRIX L

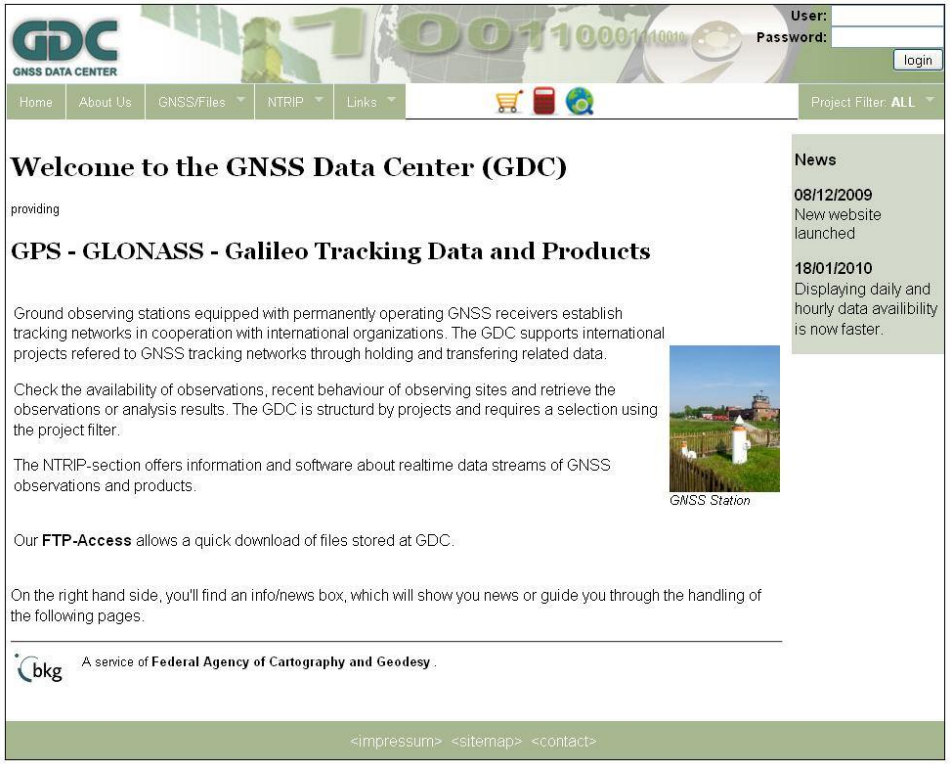
Mandatory

1. Number of observation
2. Number of unknowns
3. Weighted square sum of o – c

"COV-SINEX" and "NEQ-SINEX "accepted

New Website at BKG GNSS Data Center - EPN Analysis Product Holding -

- HTML now based on “Zend Framework”
  - extending art & spirit of PHP
  - tested codebase
  - modern web 2.0 applications



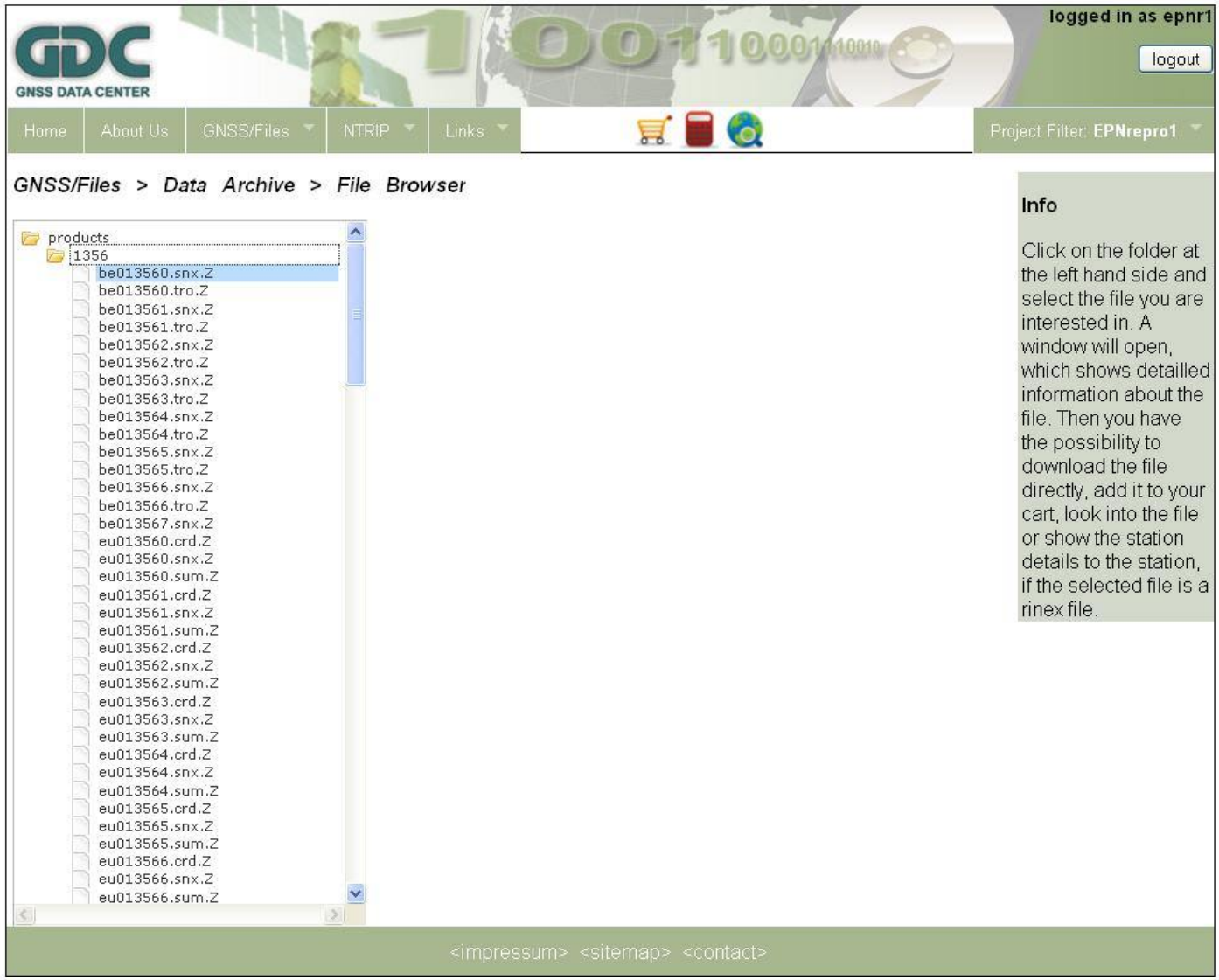
http://igs.bkg.bund.de

Federal Agency for Cartography and Geodesy

New Website at BKG GNSS Data Center
- Project Filter and File Download -

Federal Agency for Cartography and Geodesy

New Website at BKG GNSS Data Center - EPN Re-Reprocessing Results -



Re-Construction of Normal Equations - NKG 1560 -

Type of SINEX	Re-Construction Original NEQ	A-Posteriori RMS of Unit Weight	Variance Factor
COVA	NO	0.00100 m set to default (v'Pv < 0 reported)	1.00 set to default
COVA	YES	0.00133 m	1.28
NEQ	NO	0.03647 m	1329.89
		0.00100 m after re-scaling	1.00 after re-scaling
NEQ	YES	0.00133 m	1.28

Re-Construction of Normal Equations - BKG 1564 -

Type of SINEX	Re-Construction Original NEQ	A-Posteriori RMS of Unit Weight	Variance Factor
COVA	NO	0.03101 m	961.35
		0.00100 m after re-scaling	1.00 after re-scaling
COVA	YES	0.00122 m	1.49
NEQ	NO	0.04075 m	1660.26
		0.00100 m after re-scaling	1.00 after re-scaling
NEQ	YES	0.00122 m	1.49

Re-Construction of Normal Equations - Status in Summary -

- NEQ-SINEX applied for submission of weekly sub-network solutions of the LACs since March 2010, COV-SINEX continued for EPN combined solution
- 12 LACs submit solutions in NEQ-SINEX
- 4 LACs submit solutions in COV-SINEX (3 explained why to continue with COV)
- More information about re-construction of NEQ in SINEX 2.02 (December 01, 2006) text document

Contribution of Analysis Coordinator to EPN Reprocessing

- Tasks of the AC
  - Combination of daily and weekly re-processed LAC solutions
  - generation of weekly combination to be discussed (7 days → 1 week by LACs or AC)
- @ BKG Data Center
  - EPN Re-Processing project established
- Trial combination of available weekly submissions for 2006
  - completed
- Trial combination of available daily submissions for 2006
  - completed
- Presentation of Christof Völksen, Chair Re-Processing WG

EPN LAC Workshop 2010

SEVENTH EUREF LACS WORKSHOP

November 18 - 19, 2010

Warsaw, Poland

- First Day
  - Reports from the EPN Coordination Group
  - Local Analysis Centres reports
  - New Analysis Products (near real-time products etc)
  - Site, receiver, antenna and other issues
- Second Day – Reprocessing Session
  - Reports from pilot reprocessing (year 2006)
  - Reprocessing strategies: Test, Results, Problems
  - Combination of the Repro-Products and alignment to the Reference frame
  - Proposals, plans for future, discussion

http://www.cgs.wat.edu.pl/LAC_workshop/index.html

Outlook
- Near-Term -

- Complete analysis solutions (weekly, daily, hourly) for as many EPN stations as possible
- Re-Processing
  - “Do the job”
  - Evaluation of results
- LAC Workshop 2010 in Warsaw
  - Update all aspects relevant for EPN analysis